

CLAIMS

1. Procedure for obtaining a sterile container (110) from a preform (3) of thermoplastic material that is heated (100) then wetted (101), by blow molding, alternatively by drawing and blow molding, characterized in that it consists of:

1) Applying (4, 41 - 44, 45) a heat-activated sterilizing product, to the said preform (3) and

2) Heating the preform to simultaneously activate the said product and increase the temperature of the preform in preparation to reach its softening temperature,

3) Molding (101) the said preform by blow molding, alternatively drawing and blow molding to obtain the final container (11).

2. Procedure according to Claim 1, characterized in that the application of the product is preceded by a phase for suppression of the static electricity present in the preform (3).

3. Procedure according to Claim 2, characterized in that the suppression of static electricity present in the preform (3) is obtained by injection (49) of ionized air into the preform (3).

4. Procedure according to one of Claims 1 to 3, characterized in that the product is a liquid and that its application (4) to the preform is carried out by wetting at least the interior walls of said preform (3) with a volume of liquid adequate for sterilizing.

5. Procedure according to Claim 4, characterized in that the wetting (4) is carried out by filling (41 - 44) then draining the preform without drying same so that a volume of liquid adequate for sterilizing remains.

6. Procedure according to Claim 4, characterized in that the wetting (4) is carried out by spraying (45, 45) into the preform the volume of fluid adequate for sterilizing.

7. Procedure according to one of Claims 2 to 6, characterized in that the product can evaporate and the volume of product applied is such that it is completely evaporated at the end of heating before molding.

8. Procedure according to one of Claims 2 to 7, characterized in that the product is an oxidizing agent.

9. Procedure according to Claim 8, characterized in that the product has a hydrogen peroxide base.

10. Procedure according to Claim 8, characterized in that the product has a peracetic acid base.

11. Procedure according to one of Claims 4 to 10, characterized in that the liquid volume is less than one hundredth of the total volume of the preform.

12. Procedure according to Claim 11, characterized in that the volume of liquid is between five hundredths and three thousandths of the total volume of the preform.

13. Procedure according to one of Claims 1 to 12, characterized in that the blow molding of a container (11) is carried out using a sterile fluid, such as sterile air, in such a way that the container can be filled and/or capped immediately after blow molding.

14. Procedure according to one of Claims 1 to 12, characterized in that the blow molding of the container is carried out using filtered air and is completed, as a precaution, with an operation (114) for suppression and/or destruction of any septic particles that may be introduced at the time of blow molding in order to permit possible subsequent filling and/or capping.

15. Procedure according to Claim 14, characterized in that the operation (114) consists of rinsing using an appropriate sterilizing product, such as a sterilizing liquid and a draining of the container.

16. Procedure according to Claim 15, characterized in that the draining is followed by drying of the container.

17. Procedure according to one of Claims 1 to 16, characterized in that the heating of the preform is carried out in two steps, a first one (115) to activate the product action and start increasing the temperature of the preform and a second one (100) to continue the action of the product, to evaporate it and to give the preform a specified heat profile in preparation for molding it.

18. System for implementation of the procedure according to one of Claims 1 to 17, comprising the means (100, 115) for heating the preforms and the means for molding (101; 109) by blow molding, alternatively by drawing and blow molding of containers (110) from heated preforms (3), characterized in that it has, upstream of the heating means (100), means (4; 41; ... 44; 45) for applying a heat-activated sterilizing product, to the said preforms (3) and the means to transfer the preforms with the product into the heating means in order to activate the product and bring the preforms to their softening temperature.

19. Procedure according to Claim 18, characterized in that the sterilizing product is a liquid and in that the means for applying the product to the preform are arranged to wet the preforms.

20. Procedure according to Claim 19, characterized in that the means for wetting the preforms are made up on one hand by a series of buses (41 - 44) located above the path of the preforms upstream of the system, in order to fill the preforms when they pass in line in front of these buses, and on the other hand by the means (5) to return and drain the preforms without drying them.

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21. Procedure according to Claim 20, characterized in that the means for returning the preforms are made up of returning means (5) to place the preforms neck down in the heating means (100).

22. Procedure according to Claim 19, characterized in that the means for wetting the preforms are made up of a sprayer (45), such as an electrically-controlled low pressure automatic gun.

23. Procedure according to Claim 22, characterized in that the gun is fed with air (451) and with spraying liquid (45) and the passage of the liquid is controlled by a control element (9) activated by a sensor (10) that senses the position of the preforms.

24. Procedure according to one of Claims 18 to 23, characterized in that the heating means (100) to activate the product and bring the preforms to their molding temperature are made up of the furnace (100) for thermal conditioning of the preforms in preparation for molding them.

25. Procedure according to one of Claims 18 to 23, characterized in that the heating means are made up, on one hand, by a heating enclosure (115) downstream of the means (4) for applying the sterilizing product and, on the other hand, by the furnace (100) for heating the preforms for their thermal conditioning in preparation for molding the final containers, the said furnace (100) is downstream of the enclosure (115) and transfer means are provided between the enclosure (115) and the furnace (100) and are arranged so that the preforms will not become cooled when they go from the enclosure to the furnace.

26. Procedure according to one of Claims 18 to 25, characterized in that it has means for blowing the sterile air into the preforms in preparation for molding them into final containers (110).

27. Procedure according to one of Claims 18 to 25, characterized in that it has means for blowing the filtered air into the preforms in preparation for molding them into final containers (110).

28. Procedure according to Claim 27, characterized in that it has means (114) to carry out an operation of suppression and/or destruction of septic particles possibly reintroduced at the time of blow molding, such as an operation of rinsing and draining of the containers (110).

29. Procedure according to one of Claims 18 to 28, characterized in that it has, upstream from the means (4; 41 - 44; 45) for applying the sterilizing product, means (49) to suppress the static electricity present in the preforms.

30. Procedure according to Claim 29, characterized in that these means for suppressing static electricity are made up of a device 949 for injecting ionized air into the preforms.

31. Procedure according to one of Claims 18 to 30, characterized in that it is connected to a system for filling and/or capping the containers (110).